States, with guano; Walter Scott, for England, with do. Jan. 7—Palmetto, for Guayaquil. For the Chinchas, to load guano: Dec. 29, Peruvian; 30th, Spark of the Ocean; Jan. 2, C. A. Farewell; 10th, Wellfleet.

The silver mines of Cerro Paseo were producing well. Pina was quoted at $11 to $11.1; Quicksilver at $116 to $118 per 100 lb, with a downward tendency.

Business in Callao was brisk, and guano freights had an upward tendency, which induced many shipmasters to hold on before chartering their vessels. There were no American vessels of war in port.

ECUADOR.—I shall commence my summary of news relative to this republic by an extract from the Lima correspondence of our local paper.

"Castilla is Dictator of Ecuador, and Gen. Franco is his policeman ready to obey his orders at a moment's notice. The Peruvian papers say that their whole army will be in Paita on the 20th inst., which of course nobody believes. Castilla gave 1,000 muskets and rifles, 100,000 ball cartriges, two howitzers, and $100,000 cash, to pay the troops, to Franco; immediately afterward an Ecuadorian division of 1,000 men, infantry and some artillery, left for the interior to subdue the country, and their barracks in Guayaquil were occupied by a Peruvian division. Guayaquil is now in possession of the Peruvians, whose intention is perhaps to hold it forever. Franco keeps now a very strict police, by order of Castilla; the prisons are full of political suspects, and nobody dares to express his opinion for fear of getting imprisoned immediately. The Government of Quito (Garcia Moreno) sent two Commissioners to Guayaquil, in order to treat with Franco and Castilla, and about the settlement of the affairs and the stipulations of the peace. They could not agree together, and Franco tried to force them to sign a paper which he had drawn up. He abused them terribly, threatened to banish them to Panama, kept them afterward prisoners under a strong military guard, and only by the intercession of Mr. Cope, the English Chargé d'Affaires, they were released and allowed to return to Quito, but had to leave Guayaquil directly. Ecuador is in a very unhappy state; all their public men of any consequence are discredited—Espantoso, Garcia Moreno, Robles, &c. The only hope of the country is now Gen. Flores, who, if he could raise the necessary funds, would certainly be able to oppose Castilla.

The *Comercio*, of Lima, Jan. 10, contains a long article headed "Bulletin of the Army," dated Guayaquil, Jan. 5, giving the Peruvian version of the latest state of affairs. It is a most bombastic tissue of self-laudation, in which the Peruvian army and navy are stated to be capable of performing the most wonderful feats of valor, and Castilla is set forth as the greatest, best, and bravest general of the age. If Peru wished, says this precious document, Guayaquil could have been knocked into a cocked hat in less than no time, &c.; and finally the treason of Franco and the bribery of Castilla, by means of which Guayaquil was entered after a nine months' blockade, is compared to the treaty of Villafrance, Castilla, of course, playing the distinguished part of the Third Napoleon.

On the 22d of December Castilla entered Guayaquil in state. He fraternized with the Ecuadorian Commander, and his troops with those of Guayaquil. Don Juan C. Cavero, the Peruvian Minister who caused the war, was formally reinstated, but on the 28th he resigned for the good of his health, and Dr. M. Morales was nominated in his place.

On the 4th of January Castilla issued an address to the people and soldiers of Ecuador. To the latter he says that the fact of the two armies having been in front of each other for 96 days without striking a blow is a proof of their future friendship and prosperity!

According to the terms that have been agreed upon, the boundary question between Peru and Ecuador is to be settled according to the treaty of 1829, and the lands on the eastern Cordillera are not to be allotted until the boundary question is arranged. Whether the people of Ecuador will be content to abide by the terms concluded by the Guayaquil traitors, remains yet to be seen.

ISTHMUS NEWS.

Correspondence of The N. Y. Tribune.

PANAMA, Feb. 2, 1860.

We have gotten up a real excitement on the Isthmus. What do you think it is? Gold washings. And where do you think they are? At Cruces, on the Chagres River; a never-to-be-forgotten locality by those who traveled across this narrow neck of land, from 1849 to 1854. Yes, just beneath the town of Cruces, on the banks of the Chagres River, three hundred persons are, at the moment I write, busily engaged in washing the gravelly beach, left bare by the river at this season, when the river has fallen to its lowest stage. A few days ago, say about the 28th ult., the news reached here, and samples of the gold, too. The parties who made the discovery tried to keep it secret, but the news soon spread; tin-washers were in immediate demand; shovels and picks rose fifty per cent; a long-tom, or a cradle, from less than nothing, went up to a fabulous price, and many of our most distinguished idlers have hurried off and become most industrious gold-washers. Aspinwall, Gorgona, Gatun, and other places, have furnished their quota of gold-hunters, and "the cry is, still they come!" Up to the present time, it is really hard to say whether there is much truth in the reports that are current; but that there is some there can be no doubt, for, as far as I can ascertain, about four pounds weight of gold has already been brought into town and sold. It is clean, coarse gold, in pieces weighing from half a grain to an ounce; but as yet we have to learn whether it exists in sufficient quantity to render the searching for it remunerative. I hope by the mail steamer to be able to let you know whether it is likely to turn out well or not.

The only other marvel I have to state refers to our weather, which, instead of being fine and dry, as it ought to be at this season, is cloudy and rainy, causing a good deal of anxiety and consternation to our old women, who don't exactly know what to make of it.

Gen. Herran N. Granadian, Minister at Washington, and family, came out in the Atlantic, en route for Bagota, where the General goes to forward his claims for the next Presidential election, and a little private business, of which more anon. It is rumored that the General will be succeeded at Washington by Mr. Jose M. Hurtado of this city, the present Intendente of the State, and the agent of the West India Mail steamers, a son-in-law of Mr. Perry, the British Consul here. It is said that Mr. Hurtado is also an applicant for the office of Granadian Commissioner under the Cass-Huron Convention for settling the claims between the two countries. It is most devoutly to be hoped that he will obtain neither one nor the other of the posts, for a worse man could not possibly be selected, as he is entirely anti-American in all his feelings, and is too prejudiced in regard to the wants of the 15th of April, 1856, to be able to form an unbiased opinion. There are also other reasons, which I shall mention hereafter if necessary, to show clearly why he should neither be received as Minister or Commissioner.

The Saranac arrived in port from Realejo on the 29th. Her Majesty's ship Alert, Capt. Pearce, sailed on the 27th for Central America, to await the orders of Mr. Wyke, the British Minister. The screw-corvette Pylades, from British Columbia, is shortly expected here. The Calypso is in port. The Lancaster flag-officer Montgomery is still here, but expects to sail soon for the south. The Roanoke leaves Aspinwall to-day for Pensacola. I am sorry to say that flag-officer McCheny has been for a long time indisposed.

There is really nothing else worth writing about. From the interior of the republic the news is not important. In the State of Bolivar (not Bolivia, as usually printed), the Liberals have gained the day, and are now about setting to work to reform the Constitution. In the State of Cauca, Gen. Mosquera has not succeeded in carrying out his revolutionary designs, and there appears to be a reaction in favor of the Conservatives.

The health of the Isthmus is good. Our railroad continues improving every day, and the traffic increasing.

Should anything occur between the sailing of the Atlantic and the departure of the mail steamer, I will keep you fully posted up.

MR. BIGELOW IN HIS OWN DEFENSE.

To the Editor of The N. Y. Tribune.

SIR: I have been severely censured by the verdict of the Coroner's Jury on the fall of the Pemberton Mill, and as from the nature of an inquest a man is forbidden, either by counsel or otherwise, to speak for and defend himself before it, I have no remedy but in an appeal to the tribunal of the public. By your position as journalists you are the guardians in many respects of that which is good and valuable in the community. Such, in my case, is a hardly-earned, honorable reputation in a professional career of twenty-five years. I have, therefore, to ask of you the favor to publish in your excellent and widely spread paper the inclosed card, which I cut from *The Boston Journal* Feb. 4. I have the more confidence in making this request, because I have recognized, by the perusal of your journal during the last ten years, an honest desire to promote *truth and right* as against error and wrong wherever found. I am, very truly, yours,

CHARLES H. BIGELOW.

New-Bedford, Feb. 6, 1860.

A CARD.

The verdict of the coroner's jury, on the fall of the Pemberton Mill, having now been published, throwing extreme censure on me, I wish to call attention to the principal facts shown in the evidence before them.

In the first place, it is abundantly proved that the bad casting of the iron columns was the main cause of the disaster. Obtained from the source and in the manner they were, no calculation or allowance of strength would have been of any avail as security. These columns were calculated to bear only one tenth of the breaking weight; and I apprehend that very few engineers in the world would say that a *greater* margin of security than this was needed.

Secondly: The use of iron pintles (connecting the columns of one story with those of the next), although in common use in building, did not in this case come from me. My invariable habit was to use the clasp embracing the beam. Although a model of such a pintle is mentioned in the correspondence, that somebody would show to me, I have not the slightest recollection of ever having seen it, and I know that I was never called upon beforehand to determine its strength. Long after all discussion of the system of columns was ended, the columns and pintles, as contracted for and purchased by the owners of the mill, were received in good faith and put into the building without any special attention being called to the subject of their strength. If, under the circumstances, I ought then to have examined and rejected them, the responsibility for not doing it fairly rests with me. But, after all, it is perfectly clear that the breaking of the flange of the pintle would have had a trifling effect (owing to the mode of placing them in the beams), and could never have caused a column to break when it was properly made.

Thirdly: I cannot now attribute to myself any blame for not causing a more rigid inspection of these castings. I applied, as the testimony shows, all that anybody had ever applied before, and all that anybody would have applied in my place.

Fourthly: In regard to the sufficiency of the walls, it is enough to say that they stood six years under the full operation of the mill, absolutely invariable and as straight as when first erected, and that the mill was far more free than usual from vibrations, and in fact did not vibrate at all. It is certain, if they had been far stronger than any mill walls ever built in this country, they would have been overthrown by the destruction of the iron columns.

Fifthly: It is the united testimony of the most competent witnesses that the rigidity and invariability of the floors was remarkable. It was clearly proved that the shafting ran with a degree of perfection rarely attained. This would not have been the case if the floors had been springy on account of the distance between the points of support. Although this distance was somewhat greater than usual, all will agree that it is a point of excellence in such structures to reduce the number of the points of support as far as possible, consistently with the stiffness and security of the mill. That the former of these objects was perfectly attained, was shown, as just stated, and nobody can doubt that the Pemberton mill would have been standing secure to-day had it not been for the most unlooked-for weakness in the columns. It is very easy now for any one to suggest remedies for such a defect, and to learn a lesson—first, to guard against its occurrence, and second, against its effects, if it should occur.

Sixthly: One paragraph in the verdict states that I made all the contracts in relation to the structure, whereas it is truly stated subsequently that the owners of the mill had the right to make contracts if they pleased, and in fact they actually exercised it in regard to the pillars. It seems strange that so general and sweeping a censure as that contained in the last clause of the verdict, should have been thrown upon me, although it is stated in a hypothetical form, when so sufficient and manifest a cause for the disaster existed, (which everybody knows did actually produce it) in which I acted no part and could not have avoided by any care or diligence which would not have been most unusual and extraordinary. As far as public sentiment is made up by such things, and as far as the good opinion of my fellow-men is influenced by them, I must bear the loss.

Finally: It is the fate of engineers (and in this their lot differs from that of other professional men) as long as their work stands secure and runs with perfection to be unnoticed and forgotten. Perhaps it is one of the highest proofs of its excellence to be thus passed by unnoticed. If there are any thinking men, however, sensitive enough to imagine the suffering caused me, in having my name connected at all with this most sad and disastrous calamity, they can also sympathize in the additional regret I feel, that a structure, which was regarded as a model of excellence in the adaptation of all its parts to the accomplishment of its object, should have been whelmed in such a total defeat through the most unlooked-for carelessness or dishonesty of a subordinate agent. And under the circumstances, such men *will not* sympathize with those who can be prophets after the fact, and discover abundant fault, where *a priori* only excellence would have been found.

Boston, Feb. 3, 1860. CHAS. H. BIGELOW.

EUROPEAN EMIGRATION TO MISSOURI.

The following is the report of Frederick Münch, European Agent of the Farmer's and Vine-Growers Society, to the Board of the Society, on his European tour:

REPORT.

I sailed from New-York the 16th of April, 1859, and landed in Bremen the 2d of May. The following is an alphabetical list of the principal cities and towns which I visited, comprising nearly all parts of Germany and Switzerland:

Aarau, Altenberg, Ausbach, Aschaffenburg, Bremen, Bonn, Berne, Bäsle, Baden, Bruchsal, Bautzen, Bamburg, Berlin, Bidefeld, Cassel, Coblenz, Carlsruh, Chemnitz, Celle, Darmstadt, Dresden, Dortmund, Desseldorf, Eisenach, Erfurth, Frankfort, Friedrichshafen, Freiburg, Friedberg, Giessen, Gundelwald (Switzerland), Görlitz, Hanover, Heidelberg, Hanau, Homburg, Hamburg, Hamm, Hirschberg (Silesia), Harburg, Herford, Interlaken, Köln, Ludwigshafen, Luzerne, Lauterbrunnen, Leipzig, Lüneburg, Marburg, Mentz, Michelstadt, Mannheim, Minden, Nüremburg, Neustadt, Naumburg, Ofenbach, Oppenheim, Pfäffers, Potsdam, Rosebach, Rapperswye, Rheineck, Ragatz, Rastadt, Stuttugart, Sauch Gallen, Sargans, Thun Ulm, Uznach, Unterseen, Weinheim, Wallenstadt, Wittenberg, Würzburg, Weimar, Warmbrunn, Zürich, &c.

In Berne my first care was to find a bookseller, with whom I left 1,325 copies of my book, "*Der Staat Missouri, geschildert mit besonderer Bucksicht au deutsche Einwanderung*," &c., to be sold for no more than half a thaler (about 33 cents) a copy. I took pains to have the book suitably introduced to the public through the prominent journals and the literary institutions. I called in person on many eminent literary men, to some of whom I had letters of introduction. Among them the Editors of the *Weser Zeitung* (Bremen), of the *Didaskalia* (Frankfort), of the *Kölner Zeitung*, and the *Hamburger Nachrichten*, Professor Rossmaster, Dr. Andree, and Dr. Keil, in Leipzig; Dr. Riceser, in Hamburg; Dr. Bohmert and Mr. Hauschild, in Bremen; Dr. Nagel and Mr. Bardeleben, in Berlin; Dr. Kolb, in Stuttgart; Prof. Vogt, in Berne; Dr. Schulz, in Zurich; Dr. Markguardsen, in Heidelberg; Prof. Busch, in Bonn; Prof. Siebald, in Mannheim; Director Kapp, in Hamm; Dr. Feuerbach, in Nüremburg; and many others.

Everywhere I went, I saw always the principal booksellers, the emigration agents, and in a few cases found access to high Government officers, who were pointed out to me as having an influence in directing German emigration. I have reason to think that my book is already widely and favorably known, and to believe that it will be of important use in leading attention to the immense advantages offered to the emigrant settler in the climate, soil, and resources of Missouri.

One thing which I had chiefly at heart I could not do, viz: give public lectures. Public meetings are not lawful here without the written permission of the police. In some cities, such permission might have been procured, but I was told that there was danger of exciting the suspicion of the Government, and of doing the cause more harm than good by this means; but, in so far as I could, on railways and steamers, wherever I went, I talked with the people, and was always listened to with great interest, and my plans were heartily approved by all classes.

I wrote during my absence a pamphlet entitled "Die Zukunft Von Nordamerica, und Blicke aus der neuen Wilt in die alte, in ihren dezuraligin Zustanden," which I have not yet received from the publisher, Mr. Hanschild, in Bremen. I wrote also, at the request of Dr. Kolb of Stuttgart, an article to be used by him in introducing my book to the German public. It is yet too early to see great results from the efforts I have made to circulate information, and awaken interest in our projects for settling Missouri. Various causes are in operation to check, for the time being, the tide of emigration. All sorts of industrial pursuits, especially agriculture, have made very conspicuous progress in most parts of Germany and Switzerland; besides, the vacuum created by the immense emigration of former years has hardly yet been filled, so that laborers are in demand, and find ready employment at increased wages; farm laborers especially are scarce. Germany has had several fruitful years breadstuffs are plentiful, and the vineyards have yielded three successive full crops. The whole nation seems to be in the enjoyment of a sort of prosperity and freedom from want, despite its heavy burdens.

Such a state of things cannot be expected long to last. Political disturbances or failures in the principal crops must revive again the necessity for emigration. Even the natural increase of population will soon create a surplus which must find its outlet in emigration. The emigration this last year amounted to about fifty or sixty thousand persons, the larger portion of whom went to districts in which they already had friends. In Switzerland, a different state of things exists. The Swiss may be called the Yankees of the Old World; they are shrewd and enterprising, accustomed and inclined to seek their fortunes outside their little native country, every section of which is over populated.

The Swiss Government, instead of hindering emigration, is willing to give information and aid to emigrants. In the city of Berne I found a central emigration agency instituted by Government, to which I had free access, and the information I was able to give was received with truly republican cordiality; in consequence of which I confidently expect to see thousands of her people come to Missouri in the course of the next year, and the Swiss being good tradesmen, mechanics and farmers, they will be a most valuable acquisition to us.

I ought, perhaps, to allude to another cause of the present diminished German emigration to America, which is to be found in the condition of America herself. During the late crisis, many among the laboring classes suffered severely. Some returned to the old country, carrying discouraging reports, and the belief was widely spread that there was more suffering in America than in Europe. By my book on Missouri, I hope to convince my countrymen that this, if true at all, is only so of our large and crowded cities, and that at the West there is employment and bread enough for millions more. To this must be added the prejudice against foreigners excited by the late Know-Nothing movement which those hostile to the cause of emigration have taken pains to exaggerate and overstate—as well as the loss of respect and confidence in our position, social and moral, which has begun to be felt in Europe. It was my chief object, in the above-named pamphlet, to give these objections their true value, to explain the sources of our future prosperity and greatness, to draw a comparison between European and American life, representing, as far as possible, the bright side of the latter, as well as to give a just impression of the unbounded resources of the New World.

I have every reason to believe that an important German and Swiss emigration of vine-growers and farmers will, in the next three or four years, pour into Missouri, and develop the free labor and the agricultural resources of that favored State. No State in the Union has been so thoroughly advertised in Europe, and its vine-growing facilities offer a peculiar inducement to the labor of Continental Europe.

Believing that the benevolent and intelligent efforts of the Farmers' and Vine-Growers' Society will bring in a rich reward to this country.

I have the honor to be, &c., &c., F. MUNCH, Agent.

This is a correct abstract of Mr. Munch's report.

C. L. BRACE, Sec'y, per E. MONTGOMERY.

FROM VIRGINIA.

Correspondence of The N. Y. Tribune.

RICHMOND, Va., Feb. 4, 1860.

We have had stirring times here during the last week. His ex-Excellency Gov. Wise has been on hand eating a big dinner, and making another famous speech. He came to complete the preliminary arrangements for the Charleston Convention, and to give advice to his successor in his present alarming condition.

If you have read his dinner speech you will have seen that he settles the question of Union or Disunion, with his usual ingenuity, by going decidedly for both, thus making it entirely easy and proper for all parties to agree upon him for their Presidential candidate. The difficulty now encountered by Gov. Letcher has grown out of the late letter of Mr. Botts to the Whig members of the Legislature. Gov. Wise, however, has cut the Gordian knot by declaring that its author is more dangerous than even Underwood, and that he must therefore be expelled from the State, or the decree of ostracism against Underwood must be reversed for the sake of consistency, and he be permitted to return. But listen to the words of wisdom from the sage of Accomac:

"As you are deliberating on the raid of John Brown, it may not become me to put in any defense of my conduct in calling out the military force of the State; and I should have nothing to say on that subject if a helper of Helper [laughter] had not arraigned me before the public. All I have to say is, that it is well for him that I am not now Governor, and do not now wield the sword of Virginia. [Cheers and laughter.]

"So far as I am personally concerned, the ravings of Black Republicans, and of those who would clothe these wolves with sheeps' clothing for the sake of the 'power, place, and plunder' which they may have to bestow, pass me as idle winds. But as Governor of this Commonwealth I had duties to perform far beyond the scope of my personal vindication. When Commander-in-Chief of the militia, and the militia were called out to repel invasion and suppress insurrection, I ordered the Black Horse of Fauquier to scour from our mountain passes the Black Republicans of the Underwood order. And it is well for him, who has lately published more incendiary matter than Helper's book, that I am not still Commander-in-Chief, and that the troops of Ashby and of Scott are not still on the scout, or they might be ordered to scour this metropolis of a worse traitor to this Commonwealth than Underwood ever proved to be.

"Were I Governor of Virginia to-day I would have the constitutional right and power to order the same troops here to sweep from Richmond the helper of Helper. [Cheers and cries of 'Good.'] There is no use; it is all a farce; it is all a pretext, to have Vigilance Committees if you allow such helpers of Helper to play incendiaries with torches as inflaming as those that were found at Harper's Ferry."

It is determined between the two Governors, we understand, that the old reprobate is to be exterminated forthwith; but, as Gov. Letcher is in infirm health at this time, he has delegated the execution of the work to his illustrious and warlike predecessor, who is to employ in the service a part of the redoubtable force of ten Sawbones, with which, immediately after his nomination at Charleston, he is to sweep over the Northern States, invade Canada, and subdue the British Empire. While considering the character of our great, valorous, and never-to-be-equaled ex-Excellency, let me mention a little matter or two which his enemies, envious of his immaculate and effulgent glory, are trying to use to his disadvantage. It will be remembered that in the last two messages of this distinguished Governor, he most mildly and meekly proposed to the Legislature that they should prohibit by law free negroes from exacting interest on the money they might hereafter loan to white gentlemen; and this mild and equitable regulation has been pronounced by some, not having the fear of the Governor before their eyes, illiberal and ungenerous toward our colored people.

The fact is, Gov. Wise has had experience in this matter, and well knows what he is recommending. He has sometimes found it necessary to borrow money, and one would suppose the honor of loaning money to so great and magnificent a personage would be such that the free negroes would be willing to wait his pleasure for repayment, and gladly remit half the amount loaned. But so far from this, these rich and saucy negroes have invariably demanded the uttermost farthing, not only of principal, but of interest at the enormous rate of six per cent. You will thus see that the provocation was great, and the Governor did but his duty, and with his usual courage and gallantry, toward a powerful interest worthy of his metal.

Our worthy ex-Governor has also been censured for the declaration, that if he had been in possession of a fast-sailing fleet at the time, he would have pursued and taken the British steamer which took Fred. Douglass to England, and having captured the black rascal, he would have brought him directly here, and hung him before the Capitol, for the amusement and edification of our people.

And was he not right, when his enemies, who have heard Douglas in the North, have not hesitated to say that he was an abler and more eloquent man than our magnificent Governor? I hope, Sir, you will be stirred to vindicate the character of your ancient friend by the memory of that good time when you were so intimately associated with him under the standard bearing the motto of "The union of the Whigs for the sake "of the Union." It is now ascertained that the woman who was bayoneted on Underwood's plantation, though the wife of his tenant, was of a slaveholding family, and the daughter of a slaveholder. What a pity, since this was the only blood shed in the Governor's late campaign, except that of the cow killed by one of the guards, that our troops should have made such a mistake! The Legislature is getting on bravely, having appropriated $500,000 for arming the State, and $150,000 toward paying the expenses of hanging John Brown. This will be about half enough to settle the whole bill; and is this not a much better use of money than to devote it, after the fashion of the Northern States, to purposes of education and internal improvement? We don't believe in educating our poor whites. The next fanaticism would demand education for the negroes. It is not pleasant to be at the foot of the social scale, and if this education should become general, the sons of some of our very first families might at length find themselves in that pitiable position. The whole appropriations for the defense and protection of Slavery will probably exceed $1,000,000, and there is a rumor that Caldwell, the Republican Senator from the Wheeling District, will propose that this be charged by special tax on the slaveholders in proportion to their interest in the institution. Should he do this, his doom will be more dreadful than that of Botts, or Underwood, or any other traitor to the

OLD DOMINION.

NEW KINDS OF WHEAT.—A writer in the *Indépendance Belge* thus satirizes the way in which the productiveness of new kinds of grain is estimated:

"When a man buys a new kind of wheat at its weight in gold, it is quite natural that he should take the greatest care in the preparation of the soil in which he plants it. He selects the best spot of ground he has, with the best exposure, and watches it continually after it has come up.

"Let a weed start near the dear grain; it is immediately pulled up, which gives a very beneficial cultivation to the plant.

"And when the grain is ripe, the heads are cut off with scissors while they are moist, so that not a kernel shall be lost; they are placed in a handkerchief, and the threshing is done on a parlor table, by rubbing the them in the hands.

"So, then, the crop being weighed and measured, a calculation is made that if a surface as large as a pocket handkerchief gives such a yield, a large field—say an acre—would give so much. Then the calculator goes on to estimate the increase over the present production of wheat in France, were this kind of wheat sown instead."

CIRCASSIAN IMMIGRANTS.—A very large number of Circassian immigrants have made their way to Constantinople since the surrender of Shamyl. They crowd the city so much that Government steamers lie at the junction of the Bosphorus with the Black Sea to turn back immigrant vessels, and send them to Cilicia.

The subject of overtasking children in schools has been considerably discussed in Salem, Mass. As a consequence, the Committee of the Classical and High Schools have reduced the number of daily recitations from four to three. Thus far, the change has worked beneficially to the school.

SCIENCE AND INVENTION.

THE CALORIC ENGINE.

The recent frightful disasters arising from the explosion of steam-boilers, the destruction of life and the shocking mutilation of limbs on board the steamship Granada, and at the blowing up of the distillery at Williamsburgh, and the hat factory at Brooklyn, the catastrophe at the balance-dock at the foot of Pike street, at the ship-joiners' establishment in Ninth street, at the saw-mill in Ray, Michigan, and the fatal locomotive explosion in Marietta, Georgia—all of which have been the subject of comment in our columns during the last month—demonstrate that, with all its advantages, and under the best conditions, the steam-engine is a dangerous motor, and make it idle to assert that any excellence of materials, or experience in manufacture, or skill in supervision, can render it altogether harmless.

But for the last hundred years all the ingenuity of thousands of inventors and schemers has been unable to devise a substitute for the steam-engine, or to produce anything capable of supplying its place in whole or in part, until the recent practical introduction of Ericsson's Caloric Engine. It is alleged that this motor is entirely safe; and this point is so well established that the use of one does not raise the rate of insurance. This commercial test of safety is demonstration. It is further alleged that the engine consumes very little fuel—saving about 33 per cent of that consumed by a steam-engine of the same power. Another advantage asserted for this motor is that it requires no engineering supervision, but may be managed by a few minutes attention of the person using its power. With these claims, it must be admitted that the Caloric Engine of Capt. Ericsson has established a position as a motor that renders it a most interesting subject of investigation; and we have sought and obtained from reliable sources information in regard to it which cannot fail to excite interest among all persons having occasion to employ power.

We learn that more than three hundred of these engines, varying in dimension from a cylinder of 6 to one of 32 inches, are now in successful practical operation. Many of these are employed as domestic motors in pumping water. A large number, chiefly 18-inch cylinders, are performing a similar office at railroad stations. Mr. Vibbard, the General Superintendent of the New-York Central Railroad, after having had five of these engines in use at water-stations for several months, reports officially over his signature as Superintendent, that they perform an "incredible" amount of labor "for the small quantity of fuel consumed." One of them at the Jordan Station, he says, performs the labor of four men, at an expense of 96-100 of one cent per hour; and one at the Savannah Station does the labor of five men, at a cost of eleven cents per day, making a saving of over $120 per month. "We have "decided," he says, "to use the engines *at all stations* "where we are compelled to supply locomotives by "pumping." An engine of the same size at the Newmarket Station on the New-Jersey Central Railroad, raises 33,000 gallons of water at the cost of less than nine cents a day, or 53 cents for six days, as appears from the certificate of Mr. Overton, Roadmaster.

For driving printing-presses the Caloric engine has been found equally useful. Fifteen daily newspapers in the United States are now printed by it, and we need not add that a daily paper calls for a motor that is economical, efficient, and in all respects reliable. The engines thus employed are of 18-inch and 24-inch cylinders.

Engines of 24-inch and 32-inch cylinders are used in raising grain at railroad stations, and merchandise in large stores; in pulverizing quartz, splitting leather, propelling sewing-machines, pulping and hulling coffee, ginning cotton, and crushing sugar-cane.

The 24-inch engine has also been successfully applied for ships's use, in pumping, loading, and discharging cargoes, warping ship, handling the anchor, and for many other purposes now calling for manual labor. Such an engine on board the ship Wild Pigeon recently excited so much interest at Caldera, in Chili, as to lead to an order, within the last week, for five engines of the largest dimensions, for that port. Many engines have been sent to Cuba, where they have been successfully applied to various uses. A double 24-inch engine runs away with a cotton-gin of more than seventy saws. It is on an estate in the vicinity of Havana that a double 32-inch engine is now being applied to a cane-mill; and double engines of 48-inch cylinder are now in the process of construction for the same market. An engine of 60-inch cylinder has been ordered for a vessel for the West India coasting trade, and will be put in hand immediately on the completion of the 48-inch engines. Since the successful introduction of these engines in Cuba, an order has been issued by the Governor-General forbidding the erection of any more steam-engines in the City of Havana, or in any town on the island.

It is found that with every increase of dimension, the power of the engine is more than proportionately increased; and while the engine has been from time to time enlarged from 6 to 8, 12, 18, 24, and 32-inch cylinder with complete practical success, there is no reason to believe that the 48 or 60-inch cylinder will express the limit of available and economical power. It is sufficient to say that this limit is not yet ascertained, and that actual results indicate that it has not been approximated.

Several of the largest machine-shops in the United States are now engaged in the manufacture of these engines, under licenses from the patentee. Among these we may mention the establishments of I. P. Morris & Co. of Philadelphia, the Newark Machine Company of Newark, N. J., Clute Brothers of Schenectady, and William Kidd & Co. of Rochester in this State, and Nourse & Caryl of Boston. Mr. John B. Kitching has established a general agency for the engine in this city, where he sells machines of his own manufacture, and those of the manufacture of other licensees. The enterprising Spanish house of Pesant Brothers have the exclusive control of the patent for the Spanish West Indies. Beside the engines now in operation, and those which the licensees are building for their own trade, one hundred and thirty engines are now in the course of construction for a single agency.

It is but an act of justice to the Caloric Engine to state that the claims that are made for it of entire safety and great economy seem to be abundantly sustained by competent testimony, and we do not forget that the only competent testimony in the case is that of men who have themselves employed the engines, or watched them diligently and intelligently in the actual performance of their offices. Such testimony is that of Prof. HENRY, officially made to the Lighthouse Board, to the practical operation of an 18-inch Caloric Engine in its application to Daboll's fog whistle or trumpet. He says: "It [the Caloric Engine] is very simple in con-"struction, easily put in operation;" "easily worked, "and not liable to get out of order." "The quantity "of fuel required to supply the necessary amount of "motive power is too small to be considered an item of "importance. The furnace holds about a peck of coal, "and no addition to the fire was made during the time "the committee was making the examination, though "the engine was constantly in motion for several hours. "But the properties which more particularly recom-"mend it for the purpose of signals are, that it offers "*not the least danger of explosion*, and no water is "required for its operation."

THE NEW PLANET.

Two or three months ago we announced the discovery by M. Le Verrier, the discoverer of Neptune, of perturbations in the orbit of Mercury, which led him to believe that there must be planetary bodies between Mercury and the Sun. We gave his reasonings somewhat in detail, as this discovery was even more remarkable than that of the outmost planet of our system. We then stated what he then believed, that this might be a ring of bodies too small even for telescopic observation, and, at any rate, that probabilities were not in favor of the actual confirmation, for many years, of the brilliant deduction of the great astronomer.

But while M. Le Verrier was communicating his discovery to the public, a doctor of medicine in one of the departments of France (Eure-et-Loir) was actually observing one of these planets. M. Lescarbault, the doctor of Orgères, while yet a student in Paris, had so strong a mania for astronomical observations that he saved out of his yearly allowance of $300, $150 for a telescope. This he installed in a turning dome, in great part the work of his own hands, and, oddly enough, he recorded his observations on white-wood planks with a pencil. When a plank was full, a few strokes of the plane made it as good as new. So a plank an inch or two in thickness became equivalent to a whole ream of paper, but these new palimpsests retained nothing of the old writing. Indeed, the astronomic physician used almost as primitive a book as that by which the Norway lumbermen are paid off. The bookkeeper, after comparing accounts with the workman, sends him to the cashier for his wages, chalking the amount on his back, and when the cashier has paid him, he takes his receipt himself by brushing off the chalk-marks.

It was on a white-wood plank, which, fortunately had not been planed off, that M. Le Verrier found the first observation of a planet, with an estimated diameter of about one quarter that of Mercury, and much more important in weight, if not in bulk, than any of the 57 planets which inhabit the void between Mars and Jupiter. M. Lescarbault's planet requires about three weeks for its revolution about the sun, while the period of Mercury is about three months. It is only one-seventh of the distance of Mercury from the center of the sun, and it is very doubtful whether it can be seen except when it passes across the disc of the sun.

This observation was made before the publication of M. Le Verrier's calculations, and its importance was revealed to the obscure physician by an article in the *Cosmos*, which encouraged him to publish it. M. Le Verrier went immediately to Orgères, and the modest doctor was infinitely surprised one morning to find the astronomer-in-chief of the National Observatory his guest. The original plank was carried off in triumph by the National astronomer, and publicly exhibited at the next meeting of the Academy of Sciences.

This is probably only the first of a new series. Its action on Mercury can only account for its perturbations in part. Probably there are not less than a dozen in the comparatively limited space between the sun and Mercury, only about 30,000,000 of miles. Theoretical astronomy has achieved a new triumph. Our solar system has been explored with pen and telescope from its center to its circumference.

THE METEOR OF FEBRUARY 2.

Correspondence of The N. Y. Tribune.

CONDERSPORT, Pa., Feb. 4, 1860.

A very remarkable luminous meteor was visible on the morning of Feb. 2, consisting of two distinct and perfect circles or halos, and two partial ones, situated as follows: The first was a large circle about the sun, having a diameter of about 40°, very bright and exhibiting the colors of the rainbow. On each side of the sun, and at a distance from it equal to the radius of this circle, was a sun-dog, or mock-sun, tinted with the prismatic colors. Off in the North-West, and similarly located, with respect to distance, from the horizon, and from each other, were two other mock-suns, colorless, being of a pale white light. Second—Passing through the true sun, and the four mock-suns, was another circle, or halo, of pale white light. This circle, which was perpendicular to that about the sun, and parallel to the plane of the horizon, was clearly and distinctly defined in all its parts. The third circle was overhead, having the zenith for its center, and exhibited the rainbow colors with great brilliancy. This zenith circle was not complete, only one-third of it, viz: that between the zenith and the sun, being visible, while no trace of the other two-thirds was to be seen. The fourth circle, which was somewhat indistinct, and but partially developed, being an arc of about ten or fifteen degrees in length, was tangent to the halo surrounding the sun and directly above it. These four circles were visible for about two hours, or from 9 to 11 o'clock. As the sun increased in altitude, the pale horizontal circle was elevated in like manner; while the zenith circle, which was, when first seen, about 40° in diameter, was correspondingly diminished in size. It might be well to state, also, that the weather on the morning of Feb. 2 was very cold, the thermometer standing several degrees below zero, and the atmosphere filled with frozen mist, which was falling in the shape of thin crystaline flakes. To the casual observer, it would seem to be snowing very fast, but subsequent observations showed the sky to be cloudless. An attempt to account for this singular phenomenon may be found in Brande's Dictionary, under "Halo" and "Parpelion." J. H. P.

IRON AND STEEL.—In an interesting controversy among the manufacturers of England as to the change which iron undergoes in the formation of steel, it was shown that much mystery still hangs over many of the important principles in this branch of practical science. Mr. Wm. Corbet's views, though somewhat different from those heretofore held by scientific manufacturers, appear plausible and philosophical. He says:

"As regards Mr. Bessemer taking out a little carbon to make steel, it is a wrong idea; he gives it sufficient oxygen to make it stand the hammer. But in doing so, he destroys a portion of carbon, which is a dead loss. I fancy 'J. P.' has an idea that iron and carbon, in certain proportions, make steel. But Mr. Mushet can inform him that iron and carbon will not make steel in any proportions whatever; a hammered charcoal bloom contains more carbon than any steel, and every process it goes through after, it keeps losing a little carbon. But in no process does it ever exhibit any signs of steel, neither will it harden.

"If you think I am not intruding too much, I will explain to 'J. P.' the nature and properties of steel. In the first place, we calcine our ore; by so doing we drive out sulphur, phosphorus, carbonic acid, and steam. When those gases are gone, the ore is left porous, we put it in the blast-furnace with a large amount of coal and lime; such a large amount of nitrogen mingling with the carbon in the presence of a strong base-like lime, they are forced to unite, and form cyanogen. The latter is forced by pressure into the pores of the ore, and goes down into the earth, and the atoms of cyanogen become coated over with iron. When the latter is taken to the puddling furnace and melted again with oxidising cinders, as soon as the iron has received a little oxygen it begins to adhere to those atoms that contain the cyanogen, so that they increase in size, and roll about like small shot. If the puddler gathers them together in that condition and takes them to the hammer, they make what we term puddled steel. If the puddler gets the furnace a little hotter, and keeps them in a little longer, they will absorb more oxygen. The latter penetrates to the interior, and causes the cyanogen to expand, so that the atoms become as large as hemp-seeds or peas. At that time the outsides are in a state of fusion; they touch each other, and stick together, like so many balls of wax. When they are hammered and rolled, they still hold fast together, and pull in strings, and form the well-known fiber.

"Now, that iron still contains cyanogen, which gives all steel its hardening properties, but the extra quantity of oxygen has overpowered it, and made it malleable. If I take that iron and convert it, the carbon will drive out the oxygen, and leave the carbon and cyanogen master of the field.

"Cyanogen is a gas that is easy of expansion. When a piece of steel is heated, the gas begins to evaporate but dip it in cold water and pull it out again quick, the outside pores become contracted and closed; but the interior being still hot, it keeps driving the gas to the surface, where it becomes so dense and hard for want of room to escape.

"Now, take another piece of steel, and keep it at a red heat for some time, and not dip in water; all the nitrogen will evaporate, and it will become iron and carbon, but not steel, for carbon will not expand and rise to the surface; so the properties of steel have gone, and, though the smith was watching, he never saw it go; therefore it must be an invisible gas; and if any scientific men or chemist can find an error in what I have stated, by making it public, he will much oblige."

PRESERVING MEATS—AN IMPORTANT DISCOVERY.—Messrs. Clark & Murch, provision merchants, of Liverpool, Eng., after a long course of experimental tests, have succeeded in greatly facilitating and improving the preservation of meats as fresh and palatable as when taken from the butcher's stall. The process is simply this: the raw meat or other provision is placed in an air-tight can or jar, when a portion of the air is exhausted and its place filled with a gas which unites with and destroys the effects of the remaining oxygen, the vessel is then sealed up, and its contents remain fresh and sweet for any length of time desired.

From various trials on shipboard and in hot climates, where salt even fails to preserve meats for a long time, this process has proved perfectly successful, and as it is equally applicable to other kinds of provisions, and a more sure preservative, and as no cooking or other preparation than the one described is required, it is far preferable to the ordinary mode of preserving in hermetically-sealed cans. It is also alleged that green fruits of all kinds may be kept in a perfect state, retaining the same freshness and delicious flavor as when taken from the tree.

Several years having been spent in testing the efficacy of this process, works are now being constructed by Messrs. Clark & Murch, for doing an extensive business in packing fresh meats, hams, bacon, etc., for army and general market purposes in India.

Should this discovery prove as efficient on a large scale as it is alleged to have done experimentally, its utility will not long be limited to India, but will prove invaluable in all hot countries, and should it, as is alleged, preserve green fruits, we shall soon be enabled for the first time to taste in New-York the rich and luscious flavors of fresh tropical fruits.

ARTIFICIAL MARBLE.—Many varieties of artificial marble have from time to time been invented, some of which have been applied to the useful arts; but nothing has heretofore been discovered of sufficient purity and hardness to answer the requirements of the sculptor. A practical chemist of Brussels, of the name of Chargy, the original discoverer of the divisibility of the electric light, has recently discovered a process of producing liquid statuary marble, which can be molded on the plaster figure, thus taking a perfect impression of the cast at once, saving nearly all the labor of the artist, and producing a figure as purely white, hard, and polished, as the genuine rock itself, in fact possessing every quality of the genuine statuary marble. Having been tested by many of the eminent European chemists, it is confidently believed that this invention will eventually supersede the quarry, and thus save much of the labor heretofore attendant on the sculptors' art.

TINNED LEAD TUBING.—A simple, cheap, and efficient process of tinning lead pipe is about being introduced into this country, which promises to produce an article for hydrant and other purposes, which will be free from the objections to lead, and much cheaper than the solid tintubing now used.

The lead is heated to a temperature of 580 degrees, which is just below melting, when, by a simple and ingenious machine, it is so drawn out as to admit of a constant supply of tin, both to its inner and outer surface, at the point where it is drawn. The surfaces of the pipe being scraped bright at this point, and the heat of the lead being above the melting point of tin, the tin flows and adheres to the pipe, before the latter again has time to oxydize. The apparatus may be so adjusted as to lay on a coat of tin of any desired thickness.

BRACKETT'S BUST OF JOHN BROWN.

The best things of this world never obtrude themselves on public notice. Walking through Washington street, one may see plenty of rich jewelry sparkling in the windows, graceful statuettes, and vases moulded into every form of beauty. But the gem of gems, the thing most worth seeing in all the city, is in an artist's studio, up two flights of stairs, No. 24 Tremont-row. There those who visit Boston can see Brackett's wonderful bust of John Brown. That the whole press has not lauded it, with one universal chorus of praise, is merely because the name of John Brown is, at this time, an apple of discord.

Those who knew the martyred hero well, pronounce it an admirable likeness. Such is the written testimony of Sennott, the lawyer who was with him during his trial. The artist labored under the disadvantage of not being allowed to enter the prison when he went to Virginia for the purpose of making this bust. But a friend took accurate measurements for him, and he had enlarged photographs to guide him. It is also a fortunate circumstance that he chanced to meet John Brown in the streets of Boston several months before his brave bearing at Harper's Ferry had made him world-famous. The expression of the face and the carriage of the head attracted his artistic eye. He said to himself, "There's a head for a sculptor." He looked after him earnestly, and went back in order to pass him again. Upon inquiring who it was, he was told, "That is old John Brown of Kansas." The strong impression then made on his mind had much to do with his subsequent desire of going to Virginia for the purpose of modeling his head. The Virginians refused to grant opportunities for this work, partly because they suspected he was secretly employed to make a plan of the jail with a view to rescue, and partly because they wanted John Brown to die, and there to be "an end of him," as some of them expressed it; a wish which does not seem to be in a very fair way of fulfillment.

When the artist returned, his soul was so completely absorbed in his work that John Brown was continually before him, in the dreams of the night and the mental visions of the day. He read attentively all his writings and sayings, in order to become thoroughly imbued with his character. With such concentration of thought, perhaps it is not extraordinary that he should have produced an excellent likeness. But it required genius to make it so alive. It is this that makes it impress me more deeply than anything I have seen of modern sculpture. There are many statues with graceful outline, and exquisitely cut; but the *soul*, that made the marble seem to breathe in ancient sculpture, is almost always wanting. In Brackett's Bust of Brown, the character of the man looks through the features wonderfully. Any good judge that examined it, without knowing whom it was intended to portray, would say, "That is a man of strong will, and lofty courage; kindly of heart, and religious to the very core of his being."

A Boston gentleman, who had lived much in Europe, exclaimed, "It is singularly like Michael Angelo's Moses!" Other visitors have also observed this resemblance. But Mr. Brackett had never seen Michael Angelo's Moses, nor any representation of it. In fact, the similarity is merely in character. It is the sublime expression, the air of moral grandeur, which connects the two in the imagination of the spectator. This is not surprising, when we reflect that Michael Angelo had for his ideal, the ancient hero who led his brethren out of bondage at the command of Jehovah, and Brackett sought to embody the modern hero, whose soul was filled with the same great idea.

That the effect produced on my mind is not peculiar, I will prove by two witnesses, whose prejudices would have predisposed them to be unfavorable critics. The sculptor's conservative friends were, of course, not pleased with the object of his visit to Virginia. One of them, meeting him in State street a short time ago, said, "What are you doing now, Brackett?" "I have just finished my bust of John Brown," was the reply. "Ah, I was sorry to hear of your going to Virginia. It will be a great injury to you," said the Conservative. The sculptor replied, "An artist must seek materials wherever he can find them; and rarely can *such* material be found as the head of John Brown. You had better come and see it." "Not I! The old murderer!" was the abrupt answer. "Then come and look at the bust of Choate; for I have completed that also," said Mr. Brackett. A few days afterward, the Hunker gentleman called to see the bust of Choate. As he stood before it, he glanced furtively, from time to time, at the head of John Brown, which stood near by. It seemed to attract him powerfully; for he soon turned and gazed upon it. At last, he asked, "Is that a good likeness?" "Those who knew John Brown well agree in telling me so," replied the Sculptor. The Hunker looked at it thoughtfully, and said, "I would give a good deal to think it was a fancy sketch." In the presence of that calm, strong, reverential head, he could not repeat the words, "An old murderer."

An artist who was extremely hostile to John Brown, after looking at this magnificent head, exclaimed, "The old curse! He ought to be ashamed of himself, for making all the rest of us look so mean."

This remarkable bust is ordered in marble. There are also many orders for copies in plaster. Admirable photographs of it are for sale; but, of course, the best of photographs can never do entire justice to statues.

Should this head be dug up, after lying buried for centuries, and there should be no clue to its history, it would at once take conspicuous rank in galleries of Art, and men would say to each other, "It might be a head of Jupiter, were there not something so Christian in its character." L. MARIA CHILD.

The Metropolitan Company has two of the strongest men of Boston in its employ. One of them is engaged in the carhouse on the line, and by practice is enabled to lift 1,600 pounds, without straps. The second man is a driver on one of the Norfolk horse-cars, and, although not in good condition and practice, can lift the above amount quite easily. Neither of the men weigh above 200 pounds.